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have heard of them; or if he did, why he did not think them deserving of any notice.

Liquid acetic acid is useful however for many purposes, and this method for obtaining it, is cheap and simple, with the exception of the use of Nooth's apparatus, recommended in it, for which simpler vessels may be easily substituted.

Observations on loaded and unloaded Barges, and other floating bodies descending with streams, or currents, accounting for their heaviest extremities going foremost; by George Orr, esq. *Phil. Mag. v.35 p.31.*

Loaded barges, beams of wood, and other bodies floating with the tide, will make a quicker progress than the tide; the same will take place in the current of a river, where there is no tide. The bargemen on the Thames, account for this by saying, "that loaded barges have more hold of the tide, from their floating deeper, than unloaded ones." Mr. Orr does not approve of this reason, but thinks on the contrary, it takes place from the following cause.

"When water is perfectly at rest, its surface presents an horizontal plane; but on any change from this state of rest taking place, the particles of water are, by the force of gravitation, put in motion, and will endeavour to find their level again, or continue to move in an *inclined plane;* and all bodies floating on the surface more or less deep, or suspended in the fluid, being subject to the same laws of gravitation, take their direction with the moving fluid, and thus pass down the same inclined plane, with a motion more or less accelerated, as such bodies are heavier or lighter; that is as they possess more or less power to overcome the resistance that may be opposed to them."

Mr Orr thus accounts for the quicker progress of the floating bodies on the inclined plane so formed. "The reason of this quicker progress, seems to me to be, that any solid floating on a fluid, and descending with it, acts altogether in one mass; and its particles thus acting together, combine to overcome the resistance they meet, and to divide the fluid, which easily yielding to any pressure, will make way for the body in its descent pressing forward. Besides, the particles of the fluid do not act in conjunction, and being easily separated they roll about and impede each other by their friction, not only against each other, but against the sides of the river, and the bed on which they descend.

To this may be added, that less friction takes place between the fluid and solid, as they attract each other less, than between the innumerable particles of the fluid; consequently, the solid will glide on, or slip through the liquid with a greater degree of velocity, than the fluid, under the circumstances already enumerated, can attain."

Mr. Orr states in his paper several miscellaneous circumstances relating to the same subject, of which the following are selected.

"When the wind blows strong into any bay, or against any embayed coast, there must be an under current; because the wind prevents the return of the accumulated water along the surface."

"All pressure on bodies floating with streams must, whether the pressure be perpendicular, or oblique, increase their progress:—if the pressure be perpendicular, it adds to the weight, and consequently to their power of overcoming resistance on the part of the fluid: if the pressure be oblique, and in the direction of the motion; it will, besides encreasing the weight, give impulse.

"It is observed (by another writer on the same subject) that the surface of the ocean is an inclined plane. I have stated in some of my letters before published, that the surface of the ocean consists of an infinity of inclined planes, or of ascents and descents, owing to the attraction of gravitation and its laws."

"The reason why ships at sea that are deeply loaded make less progress on a voyage than those which are lighter, seems to be; that what they gain, in descending from the top of a wave, or inclined plane, over a lighter vessel, by their greater gravity, they lose in ascending the next wave: since the surface of the ocean consists of innumerable inclined planes; but in a river or stream the whole progress is on one descent.

"Two pieces of wood of the same kind and weight, but of different shapes, will make different progress in the same current: a cone rounded at the base, for example, will move quicker than a cylinder, and to this it may be principally attributed, that one ship sails better than another. For this reason logs for finding the direction of currents at sea should be of a conical shape, and two of them should always be thrown out together, when if they both take the same direction, the tendency of the current will be more certainly proved."

"A barge loaded at one end, and empty at the other, if floated in a fair and regular stream, without cross currents, would certainly proceed with the heavy end foremost, for the same reason that a conical piece of wood, or even a cylindrical one, loaded at one end, would go with the heavy end foremost, though placed originally in a contrary direction. The inclined plane of rivers, and streams must be very irregular, from the number of inequalities at bottom: the current will partake of these irregularities, and the motion of bodies which float in them must be affected by them in a certain degree.

"Lastly, does a body, floating down a stream or current, and which has a quicker progress than the stream or current, receive any addition to its motion from the motion of the fluid? I think it does not; that it is only indebted to the fluid for its suspension, but that it is to its gravity, and acting in one mass that it is indebted for its greater progress. On the contrary I think it loses in its velocity, or progressive motion; for though the floating body, be specifically lighter than the water, and of course one would imagine that it would move slower, still owing to the causes already enumerated, its progress is quicker: but there is a draw-back on this progress; because if the solid moves faster than the water, part of its force must be wasted against the fluid, which moves slower, but in the same direction. This case is analogous to that of two balls moving in the same direction with different velocities: that with the greater velocity, on overtaking the other, communicates part of its force, and of course loses so much in its velocity.

Remarks.—The progress of floating bodies being quicker than the stream, depends on two plain causes. 1st. The surface of the stream or river is inclined in a greater angle than the bed on which it moves itself; and the progress of the floating body, which moves on a plane of the greater declivity must be quicker than that of the stream, which moves on a plane of less declivity: 2d. The surface of the river, on which the body moves, is perfectly smooth, and makes little resistance comparatively to its progress; whereas the bottom of the river, on which the current moves, is very rough, and causes much resistance to its motion.

The nature of currents at sea, does not appear to be always the same as those of rivers; in the latter there is at all times a descent; but currents at sea, we may easily conceive to move from the mere impulse of the wind, acting on the surface in such a manner as to cause little or no depression in any one part; in the same way as water in a vessel may be moved round, by the impulse of any body made to move in it in one direction; probably, however, in most cases there is a depression of some one part, or an inclined plane formed, but it does not appear that this must be always the case.

What Mr. Orr observes of the proper shape of floats for ascertaining currents; is only repeating in other words the well known truth, that certain shapes enable vessels to pass more readily through the water, or to sail quicker, than others; for as the progress of these floats is owing to their moving quicker than the current, and of course moving through it, whatever shape will make them perform this with less resistence, must make them move faster, and indicate the current better. The theory of the shapes of vessels best for quick progress, which at present is much obscured by the cabalistical enigmas of the algebraists, is capable of being reduced to great simplicity and clearness by a proper attention to the laws of hydrostaticks, particularly in the mode in which they act in closing up the track of the vessel, and to the manner in which motion is lost by its necessary communication from the vessel to the water: which the writer hopes to have an opportunity to demonstrate on some future occasion; having a memoir on the subject nearly ready for publication, when it can bedone to advantage.

The quicker progress of the lower part of a stream or river, than the surface (though it does not operate so much as the causes stated, in occasioning loaded vessels, of a greater draft of water, to move quicker down the current than empty ones) yet it certainly must have some effect on them; and the observations of the bargemen, which relate to this circumstance, are not so void of foundation as Mr. Orr supposes. For in a river (which is resisted in its progress, by the roughness of the banks and of the bottom, and by the pressure of the air at its surface) there must be some part towards its center, most remote from these resistances, which moves quicker than the rest; and the nearer the bottom of the barge approaches to that central part, by being more deeply laden, it is clear that the greater must be the impulse which it will receive, from the superior velocity with which this part of the stream advances.

MONTHLY RETROSPECT OF POLITICS.

WE have frequently adverted to the glaring mismanagement of that hostile spirit which lately appeared in Spain against the French, either for the purpose of injuring the enemy, or ameliorating the condition of a most degraded and ill-governed people. The opportunity so unexpectedly occurring, appeared to men of all parties the best that could happen for effecting the former purpose, while many liberal and enlightened persons hailed it with rapture, as giving promise of emancipation from that ignominious servitude in which the natives of this fine country had been held for ages. An able and virtuous statesman with this powerful engine, would have accomplished both, and erected a monument for himself in the hearts of millions; but it soon became evident that the system actually followed by our ministry would lead to results equally disgraceful and disastrous to the assisters and the assisted. The last act of this tragedy is now drawing to a conclusion; and after having co-operated with a foolish or knavish junta in executing imbecile plans totally inadequate to the ostensible purpose, we are now on the eve of deserting the Peninsula, and leaving the *universal Spanish* and Portuguese nations to swell the train, and exalt the triumph of Napoleon and Joseph.

The last accounts state the French to be advancing uninterruptedly through all parts of the country, and that the junta having fled from Seville—which the French entered on the 30th January—and part of them arrived at Cadiz, had appointed a council of regency consisting of five members, and immediately dissolved themselves. Cadiz, the only place in spain *likely* to stop the progress of the French arms, was at that time in a most critical situation, having only a thousand regular troops, and the fortifications quite unfinished; and had not the duke of Albuquerque arrived unexpectedly with 8000 men, it must have fallen almost without opposition.

When the drowning weight of Spain and Portugal has been *forced* off our shoulders, we trust, if the war must still continue, that it will be carried on by other means and another spirit than it has been hitherto. We need no longer expect effectual aid in its prosecution from any existing government: we have tried them all and found them wanting. The deficiency could not arise from